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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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### Office Action Summary

**Application No.**

10/594,434

**Applicant(s)**

YANO ET AL.

**Examiner**

MARY A. DAVIS

**Art Unit**

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on November 6, 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 and 8-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 12 was amended to state "wherein said scroll compressor uses a suction gas for performing an operation with a compression ratio less than 3. The applicant has disclosed the compression ratio of 3 and the compression ratio of 2 (Page 6, ¶0024) in the original disclosure. A compression ratio less than 3 encompasses additional compression ratios not disclosed in the original disclosure, and therefore, is considered new matter.

Claims 1-6 and 8-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claims 1 and 9 were amended to recite the limitation directed to "seal means at least partially inside". The original

disclosure does not discuss the seal means being "at least partially inside".

Furthermore, what does applicant mean by "at least partially inside".

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 1, 8-11, 14-18, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over TAKAO ET AL '671 (Japanese Patent Publication JP 08-326671) in view of SUEFUJI ET AL (Japanese Patent Publication No. JP 08-170592).***

Regarding claim 1, TAKAO ET AL '671 discloses:

- A scroll compressor comprising:
- a compression section (4, 5, 6) provided in a closed container (1), said compression section including
- an orbiting scroll (6) having a groove (see Figures 8-14 that shows a groove) and volute teeth (6a) (see Figures 8-14) formed substantially symmetrically on both surfaces of an orbiting base plate (see Figures 8-14) and a main shaft (8) being penetrated through and fixed at a center portion (6b) of said orbiting scroll (see Figures 8-14)
- seal means provided at least partially inside the groove of the scroll (see Figures 8-14 and ¶0030); and

- a pair of fixed scrolls (4, 5) opposed to said both surfaces of said orbiting base plate (see Figures 1 and 6-16) (§0006), each of said fixed scrolls having a volute tooth (4a, 5a) corresponding to each of said volute teeth of said orbiting scroll (see Figures 8-14) to respectively form compression chambers (16, 17);
- a motor (7a, 7b) provided in said closed container for driving said main shaft (§0014);
- a suction pipe (9) provided to said closed container for introducing a suction gas into said closed container and for causing said suction gas to be sucked into said compression section after cooling said motor (see Figures 8-14, and ABSTRACT) ("for introducing a suction gas into said closed container and for causing said suction gas to be sucked into said compression section after cooling said motor" is considered functional language. The use of the functional language only requires that the apparatus is capable of performing the function, and does not add any specific structural limitations to the apparatus. Since the suction gas after entering the closed container is capable of cooling the motor, the prior art meets the functional limitation. Furthermore, "apparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). (See MPEP 2114));  
and
- a discharge pipe (10) provided to said closed container for discharging said suction gas compressed by said compression section (see Figures 8-14 and ABSTRACT)

- wherein the seal means (43, 44) is provided for sealing the compression chambers formed between the orbiting scroll and the fixed scrolls from an orbiting bearing (6b) provided at a main shaft side of the orbiting scroll (see Figures 8-14 that shows the seal means located on the fixed scrolls for providing the sealing means) and from main shaft bearings (seals (43, 44) also provides sealing of the compression chamber from the main shaft bearings (2a, 3a) the main shaft bearings are located in the first frame (2) and second frame (3) that is interconnected with the fixed scroll via the extension of (4) and (5f) (¶0019) and sealed with seals (4d, 3b)).

Regarding claim 9, TAKAO ET AL '671 further discloses the following limitations not already discussed above in claim 1:

- wherein each of said orbiting scroll and fixed scrolls has more than two turns of volute teeth formed toward the periphery of said main shaft (see Figures 3-5).

Regarding claim 10, TAKAO ET AL '671 discloses:

- said orbiting scroll is composed of a core part (near (6b) of Figure 3) and an volute part (6a), wherein said core part has a orbiting bearing (6b) in a center portion thereof and is formed in a curved shape such as an arc (see Figure 3), and said volute part is formed at periphery of said core part and has a continuous volute teeth formed in a volute curve in substantially the same height as said core part (see Figures 3 and 8-14).

Regarding claim 11, TAKAO ET AL '671 discloses:

- said fixed scroll has a recess in a center portion and an volute tooth formed on the outer periphery of said recess, said recess accommodating said core part of said orbiting scroll, said volute tooth, being the same in size as a volute tooth of said orbiting scroll formed in an volute curve, being rotated 180 degrees in phase (see Figures 3-5 and 8-14).

Regarding claim 14, TAKAO ET AL '671 discloses:

- an innermost chamber of said core part of said orbiting scroll does not contribute to compression (see Figures 8-14 that shows the orbiting and fixed scroll members do not have a compression chamber near the innermost chamber of the core part, and therefore, in this area it does not contribute to compression).

Regarding claim 15, TAKAO ET AL '671 discloses:

- a pair of said compression chambers is formed by a combination of said orbiting scroll and said fixed scroll (see Figures 3-5 and 8-14), and a relief portion (6g, 6i, connected via (6h)), for causing said pair of compression chambers to communicate with each other during part of a compression operation, is provided in said core part of said orbiting scroll (see Figures 3 and 8-14).

Regarding claim 16, TAKAO ET AL '671 discloses:

- a discharge port (4c) of a compressed gas is provided in a center portion of said fixed scroll (see Figure 5 and 8-14) at a spot which is not across said seal means (see Figures 8-14).

Regarding claim 17, TAKAO ET AL '671 discloses:

- said discharge port (4c) is provided at only one of the fixed scrolls (see Figures 5 and 8-14), and a communication port (6h) is provided penetrating through the orbiting base plate (see Figure 3) at said core part of said orbiting scroll (see Figure 3) and outside said seal means, and said communication port is not across said compression chamber and always communicates with said discharge port (see Figures 3 and 8-14).

Regarding claim 18, TAKAO ET AL '671 discloses:

- said discharge port and said communication port are formed respectively as a long hole or by a plurality of holes adjacent to each other (see Figures 3, 5, and 8-14, which shows that the discharge port and communication ports are formed as a long hole).

Regarding claim 20, TAKAO ET AL '671 discloses:

- the seal means is actuated by a pressure exerted on the seal means by a lubricating oil (the seal means provides a seal between the compression chamber or discharge defined by the orbiting and fixed scroll members from the space around the main shaft and bearings. ¶0043 discloses the oil pathway around the bearings of the shaft. It is inherent that the seals (43, 44) are exerted on by pressure of the lubricating oil, because this is the fluid that is flowing around the bearings is applying pressure to the seals. see Figures 8-14).

Regarding claim 21, TAKAO ET AL '671 discloses:



- the pressure is exerted on two surfaces of the seal means (see Figures 8-14 that shows the lubricating oil applies pressure to seals (43, 44) where there are two surfaces that are defined by seals (43, 44)).

TAKAO ET AL '671 discloses:

- said seal means is provided at a core part (see Figures 8-14) of said fixed scrolls at surfaces thereof facing to said orbiting scrolls (see Figures 8-14).

However, TAKAO ET AL '671 fails to disclose the main shaft bearings provided between the fixed scrolls and the main shaft and the seal means located on the orbiting scroll.

SUEFUJI ET AL teaches:

- a main shaft (500) (see Figures 1, 4, 5, and 8), a main shaft bearing (222) of said upper fixed scroll (see Figure 8), a main shaft bearing (330) of said orbiting scroll (see Figure 8), a main shaft bearing (212) of said lower fixed scroll.

TAKAO ET AL '671 utilizes a separate upper and lower bearing components from the upper and lower fixed scroll, while SUEFUJI ET AL teaches the upper bearing component integrated with the upper fixed scroll and the lower bearing component integrated with the lower fixed scroll.

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have main shaft bearings between the fixed scrolls and the main shaft of TAKAO ET AL '671, since it would require routine skill in the art to combine known prior art elements to produce predictable results. Furthermore, it would have been obvious to a person having ordinary skill in the art at the time of the invention

was made to have the sealing means on the orbiting scroll instead of the fixed scroll of the modified compressor of TAKAO ET AL '671, since it has been held that rearranging parts of an invention involves only routine skill in the art, as well as, having the sealing means on the orbiting scroll would produce predictable results.

***Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over TAKAO ET AL '671 in view of SUEFUJI ET AL.***

Regarding claim 2, TAKAO ET AL '671 discloses:

- said closed container is vertically disposed (see Figures 9-10 and 12-14),
- a lubricating oil storage chamber (22) is formed in said closed container below said compression section (see Figures 9-10 and 12-14), and
- an oil feed pump (31-38) for sucking up lubricating oil from said lubricating oil storage chamber is disposed at a lower end of said main shaft (Page 7, ¶0024) (see Figures 9-10 and 12-14).

Regarding claim 6, TAKAO ET AL '671 discloses:

- said suction pipe is provided to said closed container at said compression section (see Figures 8-14).

However, TAKAO ET AL '671 fails to disclose the compression section being disposed in the lower portion of the closed container and the motor being disposed at the upper portion of the closed container.

Regarding claim 2, SUEFUJI ET AL teaches:

- said compression section (210, 300, 220; 210, 220, 320a,b) is disposed at a lower portion in said closed container (100) (see Figures 1, 4, 5, and 8),

- said motor (700) is disposed at an upper portion in said closed container (see Figures 1, 4, 5, and 8),
- a lubricating oil storage chamber (800) is formed in said closed container below said compression section (see Figures 1, 4, 5, and 8).

Regarding claim 6, SUEFUJI ET AL teaches:

- a glass terminal is provided at an upper end portion of said closed container (see Figure 1, which shows that the upper end portion of the closed container has a glass terminal).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have the compression section at the lower portion of the closed container with the motor located at the upper portion of the closed container in the compressor of TAKAO ET AL '671, since it is well known in the art to have the compression chamber at the lower portion of the closed container and the motor in the upper portion of the closed container, as evidence by SUEFUJI ET AL. Furthermore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have the compression chamber in the lower portion of the closed container and the motor in the upper portion of the closed container in the compressor of TAKAO ET AL '671, since it would require routine skill in the art to combine known prior art elements to produce predictable results.

***Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over TAKAO ET AL '671 in view of SUEFUJI ET AL.***

Regarding claim 3, TAKAO ET AL '671 discloses:

- said suction pipe is provided at said motor housing part (see Figures 9-10 and 12-13),
- said discharge pipe is provided at said compression section (Figures 9-10 and 12-13), and
- an oil feed path is formed, said oil feed path communicating from said oil feed pump (Figures 9-10 and 12-13), running through inside of said main shaft (23) (Figures 9-10 and 12-13), opening at an upper fixed main shaft bearing (2a) (oil feed path is (27)) (see Figures 9-10 and 12-13), passing through an orbiting scroll main shaft bearing (6b)(oil feed path is from (26)) (see Figures 9-10 and 12-13), passing through an lower fixed main shaft bearing (3a) (oil feed path of (25)) and reaching said lubricating oil storage chamber (return oil path is via (30) to the lubricating oil storage chamber) (see Figures 9-10 and 12-13) (the oil feed path disclosed in the limitation is not construed to occur sequentially).

Regarding claim 5, TAKAO ET AL '671 discloses:

- a suction port (45), for communicating between said motor housing part and said compression chamber (see Figures 9-10 and 12-13)), is provided at an outer peripheral portion of said lower fixed scroll of said compression section (see Figures 9-10 and 12-13, which shows the suction port is located at the outer peripheral portion of the lower fixed scroll of said compression section).

However, TAKAO ET AL '671 fails to disclose the closed container being partitioned by said compression section into a motor housing part and a lubricating oil storage

chamber and the oil feed path including an oil feed path in the upper fixed scroll and the lower fixed scroll main shaft bearings.

Regarding claim 3, SUEFUJI ET AL teaches:

- said closed container (100) is partitioned by said compression section (210, 300, 220; 210, 220, 320a,b) into a motor housing part (700) and the lubricating oil storage chamber (800) (see Figures 1, 4, 5, and 8),
- an oil feed path is formed, running through inside of said main shaft (500) (see Figures 1, 4, 5, and 8), opening at an upper fixed scroll main shaft bearing (222) (oil feed path is (532)) (see Figure 8), passing through an orbiting scroll main shaft bearing (330)(oil feed path is from (522)) (see Figure 8), passing through a lower fixed scroll main shaft bearing (212) (oil feed path of (512)) reaching said lubricating oil storage chamber (see Figure 8 that shows the oil chamber at the bottom of the feed path to collect the oil that is then pumped back to the bearings).

Regarding claim 5, SUEFUJI ET AL teaches:

- a suction port (45), for communicating between said motor housing part and said compression chamber (see Figures 9-10 and 12-13), is provided at an outer peripheral portion of said upper fixed scroll of said compression section (It would be obvious to one having ordinary skill in the art at the time of the invention to have the suction port provided at the upper fixed scroll of the modified compressor of TAKAO '671, since when the motor is located above the compression chamber, the suction pipe would obviously enter the closed

container in the motor housing part at the upper portion, in order to cool the motor, and therefore, the suction pipe would be at the upper fixed scroll (and not the lower fixed scroll).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have the closed container being partitioned by said compression section into a motor housing part and a lubricating oil storage chamber in the compressor of TAKAO ET AL '671, since it is well known in the art to have the compression chamber at the lower portion of the closed container and the motor in the upper portion of the closed container, as evidence by SUEFUJI ET AL.

TAKAO ET AL '671 utilizes a separate upper and lower bearing components from the upper and lower fixed scroll, while SUEFUJI ET AL teaches the upper bearing component integrated with the upper fixed scroll and the lower bearing component integrated with the lower fixed scroll. TAKAO ET AL '671 discloses an oil pathway to the upper and lower bearing components, and SUEFUJI ET AL teaches upper and lower bearing components in the upper and lower fixed scrolls. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have an oil feed path in the upper fixed scroll and the lower fixed scroll in the compressor of TAKAO ET AL '671, since it would require routine skill in the art to combine known prior art elements to produce predictable results.

***Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over modified compressor of TAKAO ET AL '671 as applied to claim 3 above, and***

***further in view of either one of SUZUKI ET AL (Japanese Patent Publication No. JP 61-268880) or HARA ET AL (Japanese Patent Publication No. JP 05-180181).***

The modified compressor of TAKAO ET AL '671 discloses the claimed invention including a passage (30.and the holes seen in Figures 9-10 and 12-13 located in the frame (11)) is provided for communicating between said motor housing part and said lubricating oil storage chamber (see Figures 9-10 and 12-13), however, fails to disclose a check valve.

Regarding claim 4, SUZUKI ET AL and HARA ET AL teaches:

- a check valve ((31) of SUZUKI ET AL; (25, 27) of HARA ET AL), for preventing backflow of said lubricating oil ("for preventing backflow of said lubricating oil" is considered functional language. The use of the functional language only requires that the apparatus to be capable of performing the function, and does not add any specific structural limitations to the apparatus. Since the check valve is capable of preventing the backflow of lubricating oil, the prior art meets the functional limitation. Furthermore, "apparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). (See MPEP 2114)), is provided at an opening of said passage at said lubricating oil storage chamber (see Figures 1-2 and 5 of SUZUKI ET AL; see Figures 1-2 of HARA ET AL).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have a check valve in the passage to the lubricating oil storage chamber of the modified compressor of TAKAO ET AL '671, in order to maintain

a proper amount of oil in the lubricating oil chamber. By preventing oil from flowing out thru the divider plate and remaining in the lubricating oil chamber, the shaft is able to maintain some oil in the shaft when the compressor is shut down, and therefore, aids in lubrication at compressor start up.

***Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over TAKAO ET AL '671 in view of SUEFUJI ET AL.***

The modified compressor of TAKAO ET AL '671 discloses the claimed invention, as discussed above, however, fails to disclose the scroll compressor uses a suction gas for performing an operation with a compression ratio of less than 3. The compression ratio is dependent on the size of the chambers and the amount of change of the chamber size from the inlet to the outlet of the compressor.

It would have been an obvious matter of design choice to make the compression ratio of the compressor to any size/compression ratio desired (such as less than 3) in the modified compressor of TAKAO ET AL '671, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

***Claims 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified compressor of TAKAO ET AL '671 as applied to claims 9 and 1 above, and further in view of either one of UCHIDA ET AL (U.S. Patent Publication US 2003/0000238) or of INAGAKI ET AL (Japanese Patent Publication JP 2003-021084).***



The modified compressor of TAKAO ET AL discloses the claimed invention, as discussed above, however, fails to disclose using CO<sub>2</sub> gas as the suction gas.

UCHIDA ET AL teaches the suction gas is a CO<sub>2</sub> gas (Page 1, ¶0007) in the compression operation. INAGAKI ET AL also teaches the suction gas is a CO<sub>2</sub> gas (see ABSTRACT).

It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have used CO<sub>2</sub> gas as the suction gas of the modified compressor of TAKAO ET AL, since it requires only routine skill in the art to utilize a known refrigerant, such as CO<sub>2</sub>, in a scroll compressor, as evidenced by UCHIDA ET AL and INAGAKI ET AL.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-6 and 8-21 have been considered but are moot in view of the new ground(s) of necessitated by applicant's amendment.

In regards to applicant's arguments on Page 10 that the seal means 43, 44 of TAKAO ET AL do not seal compression chambers from the orbiting bearing provided at a main shaft since the seals means prevent the compressed fluid from leaking out between the orbiting scroll (6) and the fixed scrolls (4, 5), this is not persuasive. In Figures 8-14 it is clear that the seals will prevent the leakage from leaking into the bearings of the main shaft.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### ***Communication***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARY A. DAVIS whose telephone number is (571)272-9965. The examiner can normally be reached on Monday thru Thursday; 5:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas E. Denion/  
Supervisory Patent Examiner, Art Unit 3748

/Mary A Davis/  
Examiner, Art Unit 3748